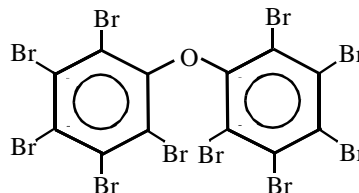


DECABROMODIPHENYL OXIDE

CAS Registry Number: 1163-19-5

Molecular Formula: $C_{12}Br_{10}O$



Decabromodiphenyl oxide is a white to off-white powder. It is nearly insoluble in water, with partial solubility in organic solvents such as acetone, chlorobenzene, and o-xylene (HSDB, 1993). When heated to decomposition, decabromodiphenyl oxide emits toxic fumes of bromine gas (Sax, 1989).

Physical Properties of Decabromodiphenyl Oxide

Synonyms: decabromobiphenyl ether; pentabromophenyl ether, decabromobiphenyl oxide; decabromophenyl ether; 1,1'-oxybis(2,3,4,5,6-pentabromobenzene)

Molecular Weight:	959.12
Melting Point:	295 - 305 °C
Density/Specific Gravity:	3.0
Vapor Pressure:	5 mm Hg at 306 °C
Log Octanol/Water Partition Coefficient:	5.24

(HSDB, 1993; Sax, 1989)

SOURCES AND EMISSIONS

A. Sources

Decabromodiphenyl oxide is used as a fire retardant additive to thermoplastic resins, polyethylene, polystyrene, adhesives, polyester fibers and coatings for textiles, paints, and for high-impact polystyrene such as for television and radio sets (HSDB, 1993).

The primary sources of decabromodiphenyl oxide in California reported in the United States Environmental Protection Agency's (U.S. EPA) 1995 Toxics Release Inventory (TRI) Public Data Release Report were the instruments and related products, rubber, and miscellaneous plastics industries (U.S. EPA, 1996b).

B. Emissions

In California, approximately 400 pounds of decabromodiphenyl oxide emissions were reported in the U.S. EPA 1995 TRI Public Data Release Report (1996b).

C. Natural Occurrence

No information about the natural occurrence of decabromodiphenyl oxide was found in the readily-available literature.

AMBIENT CONCENTRATIONS

No Air Resources Board data exist for ambient measurements of decabromodiphenyl oxide. It has, however, been detected in airborne particulate matter collected near industrial sites that use it (HSDB, 1993).

INDOOR SOURCES AND CONCENTRATIONS

No information about the indoor sources and concentrations of decabromodiphenyl oxide was found in the readily-available literature.

ATMOSPHERIC PERSISTENCE

Decabromodiphenyl oxide will exist in the particle phase in the atmosphere, and hence be subject to wet and dry deposition. The average half-life and lifetime for particles in the troposphere is calculated to be about 3.5 to 10 days and 5 to 15 days, respectively (Balkanski et al., 1993; Atkinson, 1995).

AB 2588 RISK ASSESSMENT INFORMATION

Decabromodiphenyl oxide emissions are not reported from stationary sources in California under the AB 2588 program. It is also not listed in the California Air Pollution Control Officers Association Air Toxics "Hot Spots" Program Revised 1992 Risk Assessment Guidelines as having health values (cancer or non-cancer) for use in risk assessments (CAPCOA, 1993).

HEALTH EFFECTS

Probable routes of human exposure to decabromodiphenyl oxide are inhalation and ingestion.

Non-Cancer: Some workers exposed to decabromodiphenyl oxide developed thyroid hyperplasia (HSDB, 1995). The U.S. EPA oral Reference Dose (RfD) is 0.01 milligrams per kilogram per day, based on liver enlargement in rats. The U.S. EPA estimates that consumption of this dose or less, over a lifetime, would not likely result in the occurrence of chronic, non-cancer effects (U.S. EPA, 1995a). Decabromodiphenyl oxide is fetotoxic in rabbits. Teratogenicity has not been reported (Reprotox, 1995).

Cancer: Decabromodiphenyl oxide causes liver tumors in mice. Human data are lacking.

Decabromodiphenyl oxide is not mutagenic in standard bacterial mutagenesis assays and is not genotoxic in Chinese hamster ovary cells, with or without metabolic activation (HSDB, 1995). The U.S. EPA has classified decabromodiphenyl oxide in Group D: Not classifiable as to carcinogenicity due to insufficient evidence in humans and animals (U.S. EPA, 1995a). The International Agency for Research on Cancer has classified decabromodiphenyl oxide in Group 3: Not classifiable as to human carcinogenicity (IARC, 1991).

